

FOR INFORMATION PURPOSES ONLY

[STAMPS]

Utility Model Registration Application

(3) no [illegible] symbols

5 (¥1500)

19 November 1971

Patent Office Commissioner

Mr Takehisa ITSUCHI

10 1. Title of the Design: Extending and contracting pipe

2. Creator of the Design:

Name: Kosaku URANO

Address: c/o Tokyo Electric Co. Ltd., Tokyo Works,

15 2-6-13 Naka-Meguro, Meguro-ku, Tokyo

3. Utility Model Registration Applicant:

Name: 856 Tokyo Electric Co. Ltd.

(Nationality) Representative: Yoshio KOMAI

20 Address: 2-6-13 Naka-Meguro, Meguro-ku, Tokyo

4. Agent:

Name: 7211 Patent Attorney, Akira KASHIWAKI

Address: Kyodo Building (Shin-Aoyama) 5-9-15 Minami-

25 Aoyama, Minato-ku, Tokyo 107

Tel.: 409-4535

5. List of Appended Items:

- | | |
|-----------------------------------|--------|
| (1) Specification | 1 copy |
| 30 (2) Drawings | 1 copy |
| (3) Duplicate of Application | 1 copy |
| (4) Original of Power of Attorney | 1 copy |

35 The items appended to the utility model registration application (1) submitted at the same time this day are hereby incorporated by reference.

(3) no [illegible] symbols

Specification

1. Title of the Design: Extending and contracting pipe

5 2. Scope of the Utility Model Claim

Extending and contracting pipe characterized in that a plurality of pipe bodies which are able to slide freely in the axial direction are fitted together with each other to link up, oblique edges which open out into external insertion end parts on all the abovementioned pipe bodies are formed and also annular engagement parts are formed in the vicinity of internal insertion end parts, and coupling bodies which comprise, at both ends or at one end at least, engaging single projections where one part of the abovementioned oblique edges has been cut out on the external insertion end parts of all of the abovementioned pipe bodies, which projections mesh with the abovementioned annular engagement parts and joining parts which join with the adjacently installed oblique edge parts, are attached so that they are respectively urged in the direction of engagement.

3. Detailed Description of the Design

25 The present design relates to an extending and contracting pipe which is used in extension pipes or the like in electric vacuum cleaners, for example.

There are various types of prior art extending and contracting pipes in which a plurality of pipe bodies are fitted together to link up with freedom to slide in the axial direction and all the pipe bodies can be joined in a fixed manner when they have been extended. Furthermore, there are also systems among these which 35 are configured, for purposes of ease of handling, in such a way that the pipe bodies fit together with one another automatically when they have all been extended and thereby maintain the extended state. However, when the pipe is shortened, it is necessary to remove the

stoppers of each engagement part one by one, and this is inevitably unsatisfactory for extending actions and shortening actions in an extending and contracting pipe.

5

The present design aims to produce an extending and contracting pipe with which it is possible to easily shorten a multi-stage pipe body by simply releasing a single coupling body at the time of shortening, and 10 with which there is improved operability at the time of extending said pipe.

The present design is a system which is characterized in that a plurality of pipe bodies which are able to 15 slide freely in the axial direction are fitted together with each other to link up, oblique edges which open out into external insertion end parts on all the abovementioned pipe bodies are formed and also annular engagement parts are formed in the vicinity of internal 20 insertion end parts, and coupling bodies which comprise, at both ends or at one end at least, engaging single projections where one part of the abovementioned oblique edges has been cut out on the external insertion end parts of all of the abovementioned pipe 25 bodies, which projections mesh with the abovementioned annular engagement parts and joining parts which join with the adjacently installed oblique edge parts, are attached so that they are respectively urged in the direction of engagement. Accordingly, in order to set 30 the device in its extended state, the engaging single projections of the coupling bodies automatically mesh with each of the annular engagement parts by the pipe bodies simply being pulled out, which produces a locked state, and, in the case of shortening, if each of the 35 pipe bodies is made shorter by operating the coupling body at one end to release the locked state, the pipe bodies are automatically shortened by simply applying force to the pipe bodies in the axial direction, by virtue of the fact that the joining parts of each of

the coupling bodies are joined at their oblique edges, and the locked state is released in sequence.

One exemplary embodiment of the present design will be described with reference to the drawings. The present exemplary embodiment relates to an extension pipe for an electric vacuum cleaner, and a pipe body (3) acting as a relay pipe is inserted with freedom to slide in the axial direction into a pipe body (2) which comprises a tapered connection part (1) to which a flexible pipe (not shown) is connected, a pipe body (5) which comprises a tapered connection part (4) to which a dust collection port body (not shown) or the like is connected is inserted with freedom to slide in the axial direction into said pipe body (3). Then, an oblique edge (7) which opens out into a cone shape and a stopper edge (8) with an internal diameter which fits the dimensions of the external diameter of the abovementioned pipe body (3) are formed on the external insertion end part (6) of the abovementioned pipe body (2). Furthermore, a stopper edge (10) with an external diameter which fits the dimensions of the internal diameter of the abovementioned pipe body (2) is formed on the internal insertion end part (9) of the abovementioned pipe body (3), and a thin annular engagement part (11) is formed somewhat towards the tip end of said stopper edge (10). A stopper edge (13) with an internal diameter which fits the dimensions of the external diameter of the abovementioned pipe body (5) is formed on an external insertion end part (12) of the abovementioned pipe body (3). In addition, a stopper edge (15) with an external diameter which fits the dimensions of the internal diameter of the abovementioned pipe body (3) is formed on an internal insertion end part (14) of the abovementioned pipe body (5), and a thin annular engagement part (16) is formed somewhat towards the tip end of said stopper edge (10).

Then, a partial cut-out part (17) is formed on the abovementioned oblique edge (7) of the abovementioned pipe body (2), and also single projections (19) facing away from the outer peripheral surface (18) of the
5 abovementioned pipe body (2) are formed, a coupling body (20) is inserted between said single projections (19) and the abovementioned cut-out part (17), and the central part of said coupling part (20) is rotatably attached to the abovementioned single projections (19)
10 by means of a support shaft (21). An engaging single projection (22) which engages with the abovementioned annular engagement part (11) and an oblique part (23) whose angle approximates that of the abovementioned oblique edge (7) are formed towards the tip end of the
15 abovementioned coupling body (20). Furthermore, bosses (24) (25) which respectively face away from the base part direction inner surface of the abovementioned coupling part (20) and the abovementioned outer peripheral surface (18) are provided, a compression spring (26) is attached to said bosses (24) (25) and the abovementioned coupling body (20) is urged in the
20 direction of engagement.

Next, single projections (28) facing away from the
25 outer peripheral surface (27) of the vicinity of the external insertion end part (12) of the abovementioned pipe body (3) are formed, a coupling body (29) is inserted between said single projections (28), and the central part thereof is rotatably attached to the
30 abovementioned single projections (28) by means of a support shaft (30). An engaging single projection (31) which meshes with the abovementioned annular engagement part (16) is formed towards the tip end of the abovementioned coupling body (29), and a joining part
35 (32) which joins to the abovementioned oblique edge (7) or the abovementioned oblique part (23) is formed in the base part direction. Furthermore, bosses (33) (34) which face away from the base part direction inner part of the abovementioned coupling body (29) and the

abovementioned outer peripheral surface (27) are formed, a compression spring (35) is attached to said bosses (33) (34) and the abovementioned coupling part (29) is urged in the direction of engagement.

5

In a configuration of this kind, as shown in Figure 3, the normal state is the shortened state, but when the pipe is extended for use, the pipe body (2) and the pipe body (5) are grasped and are each pulled out in the axial direction. By means of this, the engaging single projections (22) (31) of the coupling bodies (20) (29) mesh with the annular engagement parts (11) (16) when they come into alignment therewith, and the pipe body (2)/pipe body (3) and the pipe body (3)/pipe body (5) are fixedly coupled, as shown in Figure 2. In this state, the pipes will not shorten even if force is applied in the axial direction. Next, in order, shorten the pipes, as shown in Figure 3, first of all the coupling body 20 is pushed and caused to rotate in the direction of compression of the compression spring (26), the engaging single projection thereof is moved apart from the annular engagement part (11), and the pipe body (2) and the pipe body (3) are released from the locked state. In this state, the pipe body (3) enters the pipe body (2) when the pipe body (3) is pushed towards the pipe body (2). Then, lastly, the engaging part (32) of the coupling body (29) joins to the oblique edge (7) or the oblique part (23), the coupling body (29) rotates in the direction of flexure of the compression spring (35), according to the angle thereof, and said engaging single projection (31) moves out of the annular engagement part (16). By virtue of this, the locked state of the pipe body (3) and the pipe body (5) is released, the pipe body (5) also enters the pipe body (3), and the assembly is shortened, as shown in Figure 3. Moreover, when this kind of shortening operation is performed, the weight of the pipe bodies (3) (5) acts in the axial direction and they respectively become shorter, as described

above, provided that the assembly is upright with the pipe body (5) on top, while the coupling body (20) is released. Furthermore, when the pipe body (2) is connected to an electric vacuum cleaner, negative pressure is produced inside and force is generated in the axial direction and the assembly is shortened in the same way as described above by virtue of the fact that the connection port (4) side of the pipe body (5) is closed off and the electric vacuum cleaner is driven.

In the abovementioned exemplary embodiment, a description has been given of an assembly comprising pipe bodies (2) (3) (5) in three stages, but four or more stages may also be provided. In this case, the intermediately positioned coupling body comprises an oblique part and an engaging single projection on one side, and a joining part on the other. Furthermore, it is not limited to being used as an extension pipe for an electric vacuum cleaner.

With the present design as described above in a system in which a plurality of pipe bodies are fitted together with freedom to slide in the axial direction, it is possible to cause the meshing of the engaging single projection of the coupling body which is attached to the external insertion end part of one of the pipe bodies adjacently installed on the annular engagement part formed on the internal insertion end part of the other pipe body simply by extending the fitting portions of all of the pipe bodies, and by virtue of this, it is possible to automatically set the assembly in an extended state, and furthermore, in the case of shortening the assembly, the joining part of the coupling body in the locked state is joined to the adjacently installed oblique edge or oblique part, and it is possible to automatically release the locked state by applying force in the axial direction to the pipe body while operating the coupling body at one end

to release the locked state, and accordingly it is possible to shorten the assembly with a one-touch action, which makes the shortening operation extremely easy to perform.

5

4. Brief Description of the Figures

The figures show one exemplary embodiment of the present design, and Figure 1 is an oblique view, Figure 2 is a longitudinal cross-sectional side view of the 10 extended state, and Figure 3 is a longitudinal cross-sectional side view in the shortened state.

2 - 3...pipe body, 5...pipe body, 6...external insertion end part, 7...oblique edge, 9...internal 15 insertion end part, 11...annular engagement part, 12...external insertion end part, 14...internal insertion end part, 16...annular engagement part, 20...coupling body, 22...engaging single projection, 23...oblique part, 29...coupling body, 31...engaging 20 single projection, 32...joining part.

Figure 1

Figure 2

Figure 3



実用新案登録願 (3)後記号なし

(1,500円)

昭和 46年 11月 19日

特許庁長官 井 土 武 久 殿

1. 考案の名称 シュクカン管
2. 考案者 メグロクナカメグロ
東京都目黒区中目黒2丁目6番13号
住所 トウキョウテンヤ
氏名 東京電気株式会社 東京工場内
ウラノコウサク
浦野耕作
3. 実用新案登録出願人
住所 東京都目黒区中目黒2丁目6番13号
氏名 356 東京電気株式会社
(国籍) 代表者 駒井喜雄
4. 代理人 人 〒107
東京都港区南青山5丁目9番15号
住所 共同ビル(新青山)電話409-4535
氏名 7211 井理土柏木明
5. 添付書類の目録
- | | |
|------------|----|
| (1) 明細書 | 1通 |
| (2) 図面 | 1通 |
| (3) 願書副本 | 1通 |
| (4) 委任状の原本 | 1通 |

本日同時に提出の実用新案登録願(1)に
添附のものを採用する。

46-108471

48-64016-01

明 細 審 (3)後記号なし

1 考案の名称 伸縮管 2

2 実用新案登録請求の範囲 3

軸方向に摺動自在の複数本の管体をそれぞれ嵌合させて連設し、前記各管体の外挿端部に拡開する傾斜縫を形成するとともに内挿端部付近に環状保合部を形成し、前記各管体の外挿端部に前記傾斜縫の一部を切欠いて前記環状保合部に噛合う保合突片と隣設の傾斜縫部に接合する接合部とを両端に有するかまたは少なくとも一端に有する連結体をそれぞれ保合方向に付勢して取付けたことを特徴とする伸縮管。 12

3 考案の詳細を説明 13

この考案は、たとえば電気掃除機の延長管などに利用される伸縮管に関するものである。 14
15

従来、複数本の管体を軸方向に摺動自在に嵌合させて連結し、それらを延長させたときに各管体を固定的に連結しうるようとした伸縮管は、種々の形式のものが存する。また、これらのうち、取り扱いを容易にする目的で、各管体を延長させたときには自動的にそれぞれが係合して延長状態を維持するように構成したものも存する。しかしながら、縮少する場合には各係合部のストップバーを個々に解除しなければならないものであり、延長操作と縮少操作とを伴う伸縮管としては必ずしも満足すべきものではない。

この考案は、延長時の操作性の良好であることはもとより、縮少時にも一個の連結体を解除するだけで多段の管体を簡単に縮少させうる伸縮管を得ることを目的とするものである。

この考案は、軸方向に摺動自在の複数本の管体₁
をそれぞれ嵌合させて連結し、前記各管体の外挿₂
端部に拡開する傾斜縫を形成するとともに内挿端₃
部付近に環状係合部を形成し、前記各管体の外挿₄
端部に前記傾斜縫の一部を切欠いて前記環状係合₅
部に噛合用係合突片と隣設の傾斜縫に接合する接₆
合部とを両端に有するかまたは少なくとも一端に₇
有する連結体をそれぞれ係合方向に付勢して取付₈
けたことを特徴とするものである。したがつて、₉
延長状態にセットするためには、各管体を単に引₁₀
き出すことにより連結体の係合突片が環状係合部₁₁
にそれぞれ自動的に噛合つてロック状態とし、縮₁₂
少させる場合には一端の連結体を操作してロック₁₃
状態を解除した上でそれを縮少させれば、各₁₄
連結体の接合部が傾斜縫に接合して順次ロック状₁₅

塵が解除されることにより、単に軸方向への力を¹
管体に与えるだけで自動的に減少されるものであ²
る。³

この考案の一実施例を図面に基づいて説明する。
本実施例は電気掃除機の延長管に関するもので、⁵
可搬管（図示せず）が接続されるテーパ状の接続⁶
部（1）を有する管体（2）に中継管としての管体（3）が軸⁷
方向に摺動自在に挿入され、この管体（3）に集塵口⁸
体（図示せず）等が接続されるテーパ状の接続部⁹
（4）を有する管体（5）が軸方向に摺動自在に挿入され¹⁰
ている。そして、前記管体（2）の外挿端部（6）に円錐¹¹
状に拡開する傾斜線（7）と前記管体（3）の外径寸法に¹²
適合した内径のストップバー線（8）とが形成されてい¹³
る。また、前記管体（3）の内挿端部（9）に前記管体（2）¹⁴
の内径寸法に適合した外径のストップバー線（10）が形¹⁵

成され、このストップバー縁¹⁰のやや先端方向に溝状の環状係合部¹¹が形成されている。前記管体(3)²の外挿端部¹²には、前記管体(5)の外径寸法に適合した内径のストップバー縁¹³が形成されている。さらに、前記管体(5)の内挿端部¹⁴に、前記管体(3)³の内径寸法に適合する外径のストップバー縁¹⁵が形成され、このストップバー縁¹⁰のやや先端方向に溝状の環状係合部¹¹が形成されている。⁴

しかして、前記管体(2)の前記傾斜縁⁷に部分的な切欠部⁸が形成されるとともに、前記管体(2)の外周面⁹に相対向する突片¹⁶が形成され、これらの突片¹⁶間と前記切欠部⁸間に連結体²⁰が挿入され、この連結体²⁰の中央部は支軸²¹により前記突片¹⁶に回動自在に取付けられている。前記連結体²⁰の先端方向に、前記環状係合部¹¹に係合する保¹⁵

合突片⁴と前記傾斜部⁷と近似した角度の傾斜部¹
4とが形成されている。また、前記連結体⁴の基²
部方向内面と前記外周面⁸とにそれぞれ相対向す³
るボス²⁴が設けられ、これらのボス²⁴に圧縮⁴
はね⁵が取付けられて前記連結体⁴は係合方向に⁵
付勢⁶されている。

ついで、前記管体⁽³⁾の外挿端部¹²付近の外周面⁷
8間に相対向する突片⁹が形成され、これらの突片⁹
間に連結体⁴が挿入されてその中央部は支軸³⁰
により前記突片⁹に回動自在に取付け¹⁰されている。
前記連結体⁴の先端方向に前記環状係合部¹⁴に接¹¹
合う係合突片¹⁰が形成され、基部方向に前記傾斜¹²
部⁷または前記傾斜部⁷に接合する接合部¹³が形¹³
成¹⁴されている。また、前記連結体⁴の基部方向内¹⁴
部と前記外周面⁸とに相対向するボス²³が形成¹⁵

され、これらのボス③④に圧縮ばね⑤が取付けられ
れて前記連結体④は係合方向に付勢されている。²

このような構成において、通常は第3図に示す
ように縮少状態にあるが、延長して使用する場合
には管体(2)と管体(3)とを把持して軸方向にそれぞ
れを引き出す。これにより、各連結体④の係合
突片⑥⑦は環状係合部⑪⑫に一致したときそれら
と噛合い、管体(2)と管体(3)および管体(3)と管体(5)
とを第2図に示すように固定的に連結する。この
状態では軸方向に力を与えても伸縮はしない。つ
いで、第3図に示すように縮少するためには、ま
ず、連結体④を押えて圧縮ばね⑤が圧縮される方
向に回動させ、その係合突片⑥を環状係合部⑪か
らはずし、管体(2)と管体(3)とのロック状態を解除
する。この状態で管体(3)を管体(2)方向に押し込む
¹⁰
¹¹
¹²
¹³
¹⁴
¹⁵

と管体(3)は管体(2)内に入り込む。そして、ついには連結体④の接合部側が傾斜部⑦または傾斜部⑧に接合し、その角度に応じて連結体④は圧縮ばね⑤を撓ませる方向に回動し、その係合突片⑩が環状係合部側から抜け出す。これにより管体(3)と管体(5)とのロック状態が解除され、管体(5)も管体(3)内に入り込み、第3図に示すように全体が縮少される。なお、このような縮少操作を行なう場合、連結体④を解除しつつ管体(5)が上になるよう全体を立てれば、各管体(3)(5)の自重が軸方向に作用して前述のようにそれぞれが縮少される。また、管体(2)が電気掃除機に接続されている場合には、管体(5)の接続口④側を閉塞して電気掃除機を駆動することにより、内部に負圧が生じて軸方向の力が発生し、前述の場合と同様に縮少する。

前記実施例においては、管体(2)(3)(5)を三段のものについて説明したが、四段以上の複数段にしてよい。この場合、中間に位置する連結体は、傾斜部と係合突片とを一方に有し、接合部を他方に有するものにする。また、その用途も電気掃除機の延長管に限られるものではない。

この考案は上述のように、軸方向に摺動自在の複数本の管体を連設したものにおいて、各管体の嵌合部分を単に延長させるだけで管体の内挿端部に形成された環状係合部に隣設する他の管体の外挿端部に取付けられた連結体の係合突片を啮合させることができ、これにより自動的に延長状態にセットすることができ、また、縮少させる場合には一端の連結体を操作してロック状態を解除させつつ管体に軸方向の力を与えるだけで、ロック状

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

旗にある連結体の接合部が隣設の傾斜線または傾斜部に接合して自動的にロック状態を解消させることができる。したがつて、ワンタッチ動作で縮少させることができ、伸縮操作を省くことで容易に行なうことができるものである。

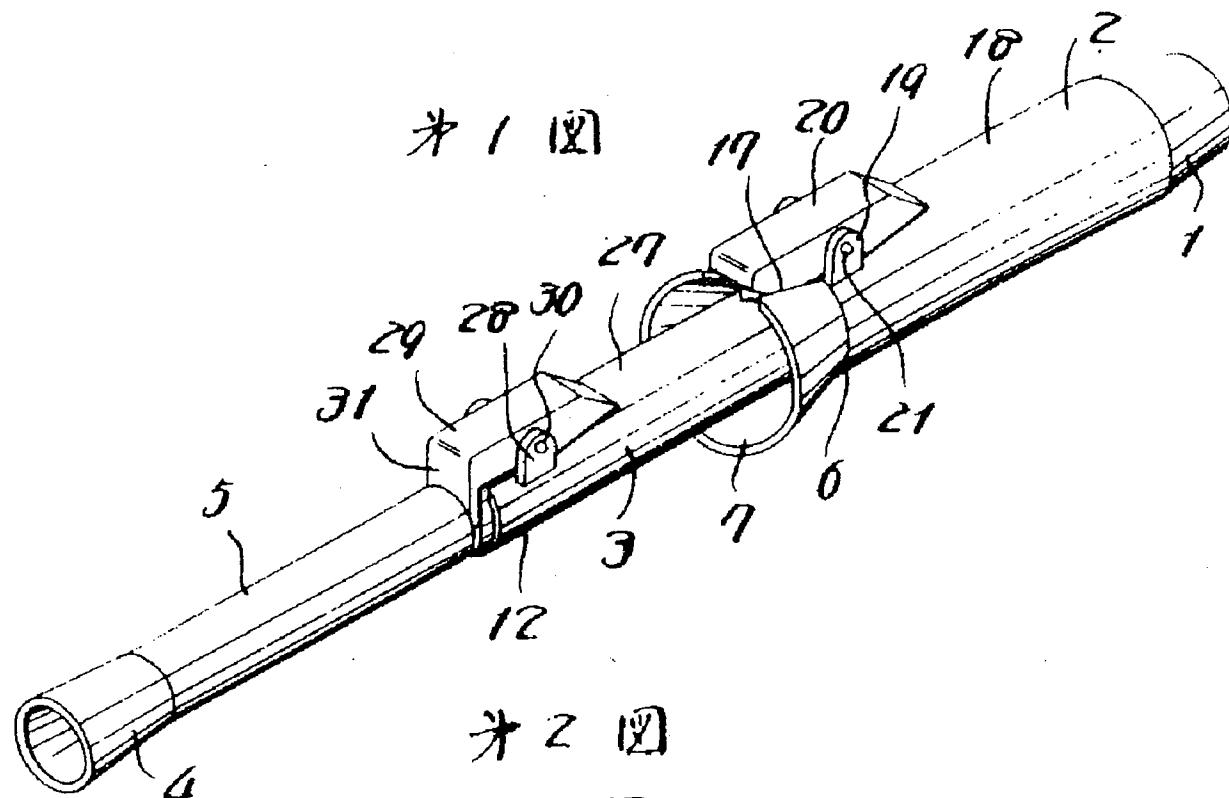
4. 図面の簡単な説明

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

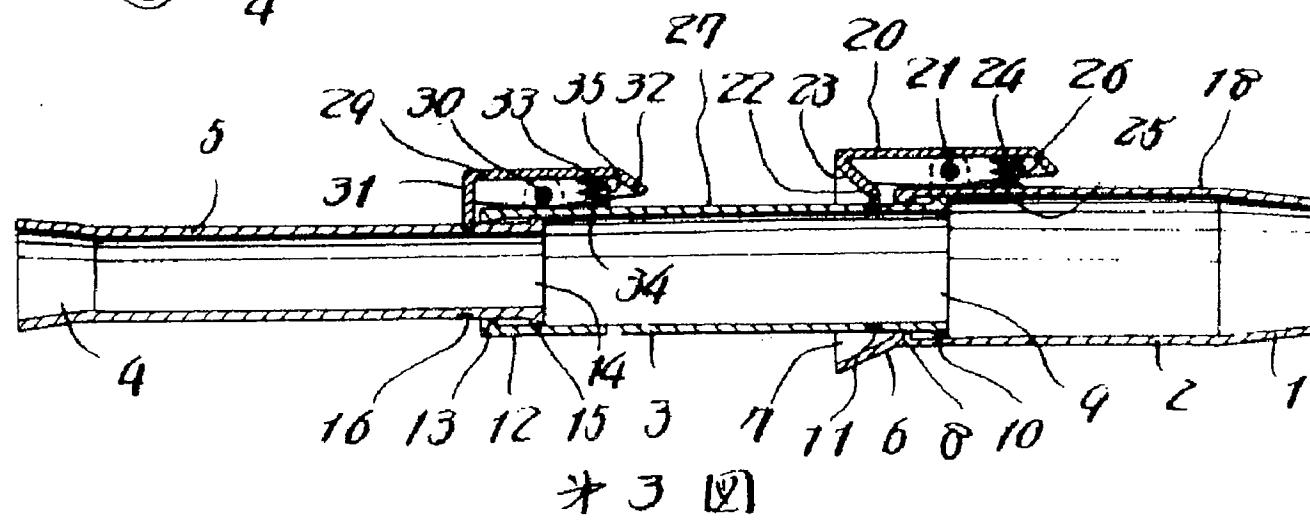
図面はこの考案の一実施例を示すもので、第1図は斜視図、第2図は延長状態の縦断側面図、第3図は縮少状態の縦断側面図である。

2～3…管体、5…管体、6…外挿端部、7…傾斜線、9…内挿端部、11…環状係合部、12…外挿端部、14…内挿端部、16…環状係合部、20…連結体、22…係合突片、23…傾斜部、29…連結体、51…係合突片、32…接合部

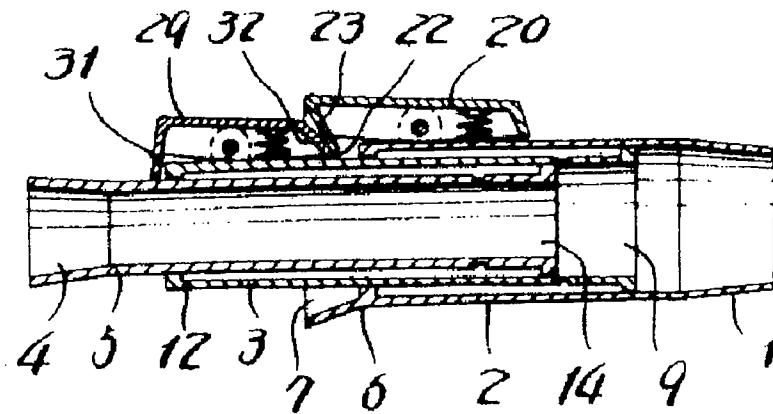
第1図



第2図



第3図



48-64016-12